

Trend Study 27R-1-03

Study site name: John R. Flat Total Exclosure .

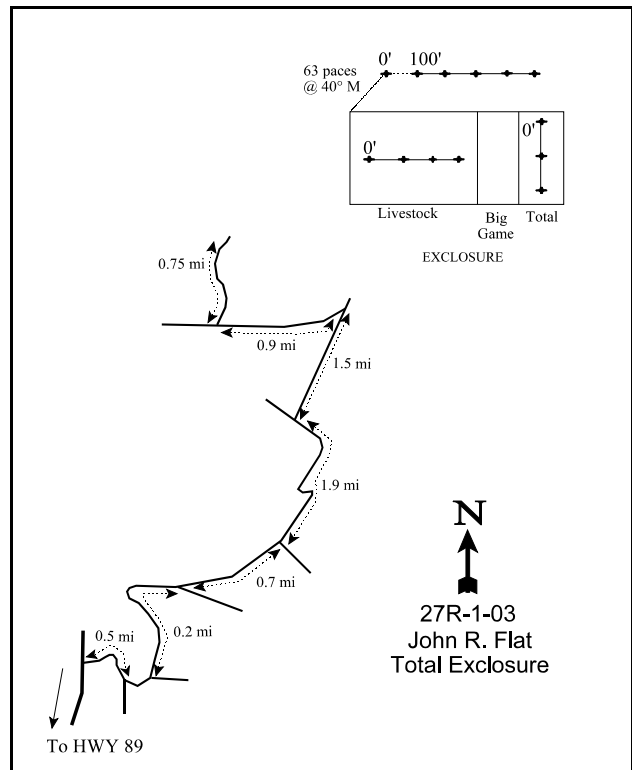
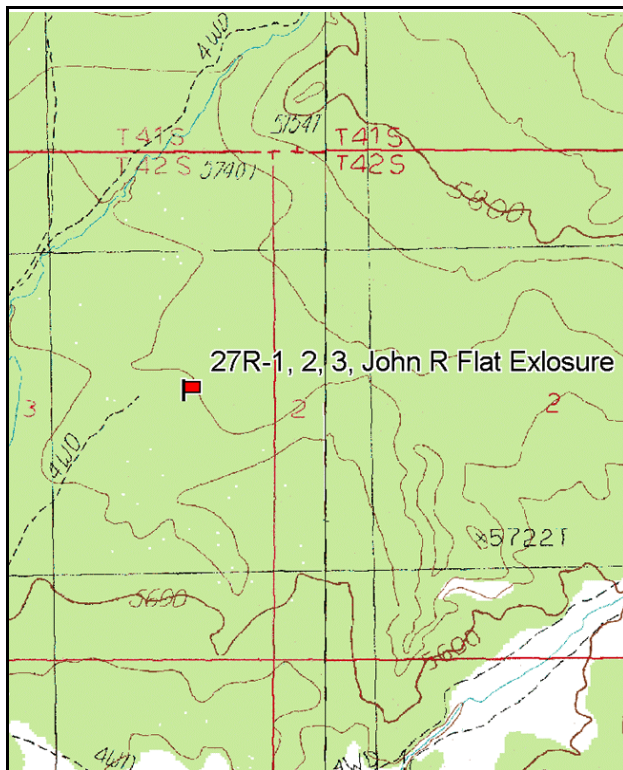
Vegetation type: P-J/ Big Sagebrush .

Compass bearing: frequency baseline 351 degrees magnetic.

Frequency belt placement: line 1 (34ft, 59ft, & 95 ft), line 2 (34ft & 71 ft). Rebar: belt 5 on 2ft.

LOCATION DESCRIPTION

From Kanab, travel north on Highway 89 to the Kanab Creek turnoff. Turn right and go 2.9 miles to another turnoff (you will pass the Best Friends Animal Sanctuary). Turn right, crossing Kanab Creek, and go 0.5 miles to a fork. Stay left and continue approximately 100 feet to another fork. Stay left again and continue 0.2 miles to the next fork. Stay left and continue 0.7 miles to the next fork. Stay left again and travel 1.9 miles to another fork. Go right at this fork and go 1.5 miles to another fork. At this fork, turn left, cross the drainage, and go 0.9 miles to a fork. Go right at the fork for 0.75 miles to the exclosure. The total exclosure is the section farthest to the east. The baseline runs north through the exclosure and has browse tag #114 attached to the 0-foot stake.



Map Name: White Tower

Diagrammatic Sketch

Township 42S, Range 6W, Section 3

GPS: NAD 27, UTM 12S 4116535 N, 366418 E

DISCUSSION

John R. Flat Total Exclosure - Trend Study No. 27R-1

The John R. Flat big game/livestock exclosure is located on BLM administered land 10 miles north of Kanab, and about 1-2 miles south of the White Cliffs. In 1998, a 3-way comparison was established to compare the vegetative community between the different exclosure treatments; total exclosure, livestock exclosure, and outside or open to all grazing animals. This study samples the interior of the total exclosure at John R. Flat. The total exclosure was built to exclude both livestock and big game and is almost half an acre in size. Aspect is to the west with a 3-5% slope, and elevation is about 5,700 feet. The exclosure at John R. Flat was built in the 1960's, but has not been fully maintained. Fence line repairs were made in the summer of 1998, in addition to debris removal on or near the fence line. There were no big game or livestock pellet groups sampled inside the total exclosure in 1998, but a dead deer carcass as well as a few deer pellets were found in 2003. Rabbit pellets were abundant in both 1998 and 2003.

Soils are very deep with an effective rooting depth of 33 inches. Soil texture is a sand which is strongly acidic (pH of 5.4). Average soil temperature was high in both surveys at 71°F (measured at a depth of 18 inches). Both potassium and phosphorous measurements were low, 3.2 ppm and 6.8 ppm respectively, and may limit plant development. No rocks or pavement were encountered on the soil surface or within the soil profile. Much of the protective ground cover on this sites comes from litter and cryptogams, and only 2% of the vegetation cover is contributed by herbaceous species. Percent bare ground cover was very high at over 40% in 1997 and 2003. Some soil pedestalling was noted around shrubs, but there is little erosion apparent at this time due to the soil texture and the levelness of the site. An erosion condition class assessment completed on site in 2003 resulted in a stable soil rating.

Browse species provided 98% of the vegetation cover within the total exclosure in 1998 and 2003. Antelope bitterbrush, basin big sagebrush, and sand sagebrush are the most abundant browse species. Bitterbrush density numbered 940 plants/acre in both surveys. Mature plants dominated the population in 1998 at 89%. No decadent plants were sampled in 1998, but 43% of the population was classified as decadent in 2003. As expected within a total exclosure, no use was noted on bitterbrush in 1998. In 2003 however, some plants showed moderate to heavy use as several deer were able to find their way into the exclosure. Recruitment by young plants was moderate in 1997 at 11%, but no young were sampled in 2003. The densities of basin big sagebrush and sand sagebrush were estimated at 920 plants/acre and 840 plants/acre respectively in 1998. Both species showed lower densities in 2003 by 200 plants/acre. Both species had decadence rates of about 20% in 1998, increasing to the mid-40% range in 2003. Basin big sagebrush had moderate recruitment in 1998 at 13%, with no young being sampled for either species in 2003. Bitterbrush and basin big sagebrush leaders averaged 3.6 and 1.1 inches of annual growth in 2003.

The herbaceous understory is very sparse in diversity and production. Total cover provided by grasses and forbs was less than 1% in both surveys. Perennial grasses and forbs maintained stable sum of nested frequency values in 2003, but with very little to begin with, this is not encouraging.

1998 APPARENT TREND ASSESSMENT

Although some shrubs showed pedestalling, current erosion is not readily apparent. The antelope bitterbrush population appears to be stable and healthy with no decadent or dead plants sampled. However, the basin big sagebrush population exhibits many decadent, dying, and dead plants. As there is no browsing inside the exclosure, this condition is primarily due to the climatic variables of extended drought and/or winter injury. The herbaceous understory is nearly non-existent with only 1 grass and 6 forb species encountered in 1998.

2003 TREND ASSESSMENT

Trend for soil is stable. Ground cover characteristics remain similar to 1998 estimates, and erosion is low. Trend for browse is down. Bitterbrush density is stable, with basin big sagebrush and sand sagebrush declining. All 3 species show large increases in percent decadence. Recruitment also declined for bitterbrush and basin big sagebrush. Although some deer found their way into the exclosure prior to the 2003 survey, use played a minor role, if any, to the declining health of the browse populations. Climatic variables, primarily drought, would have the biggest effect on browse populations within the total exclosure. Trend for herbaceous species is stable, but the understory is in very poor condition with very little to compare between years. A primrose was the most abundant herbaceous species in 2003, but it was sampled in only 7 of the 100 quadrats.

TREND ASSESSMENT

soil - stable (3)

browse - down (1)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --

Management unit 27R, Study no: 1

Type	Species	Nested Frequency		Average Cover %	
		'98	'03	'98	'03
G	<i>Bouteloua gracilis</i>	11	8	.08	.04
G	<i>Muhlenbergia pungens</i>	-	3	-	.03
G	<i>Sporobolus cryptandrus</i>	-	5	-	.18
Total for Annual Grasses		0	0	0	0
Total for Perennial Grasses		11	16	0.07	0.25
Total for Grasses		11	16	0.07	0.25
F	<i>Artemisia dracunculul</i>	-	3	-	.01
F	<i>Chaenactis douglasii</i>	2	-	.00	-
F	<i>Descurainia</i> spp. (a)	_b 28	_a 6	.32	.04
F	<i>Draba</i> spp. (a)	-	1	-	.00
F	<i>Eriogonum cernuum</i> (a)	2	-	.00	-
F	<i>Euphorbia parryi</i>	1	-	.00	-
F	<i>Oenothera</i> spp.	_a 8	_b 16	.18	.22
F	<i>Sphaeralcea coccinea</i>	6	-	.01	-
F	<i>Stephanomeria exigua</i> (a)	-	1	-	.03
Total for Annual Forbs		30	8	0.32	0.07
Total for Perennial Forbs		17	19	0.20	0.23
Total for Forbs		47	27	0.53	0.31

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --

Management unit 27R, Study no: 1

Type	Species	Strip Frequency		Average Cover %	
		'98	'03	'98	'03
B	Artemisia filifolia	31	28	5.39	6.22
B	Artemisia tridentata tridentata	38	29	6.66	5.30
B	Chrysothamnus nauseosus	0	8	-	1.60
B	Chrysothamnus viscidiflorus	5	0	1.42	-
B	Eriogonum nummularae	2	0	.03	-
B	Juniperus osteosperma	0	0	.03	-
B	Purshia tridentata	38	36	12.23	9.10
B	Rhus trilobata	0	1	.03	.03
Total for Browse		114	102	25.80	22.26

CANOPY COVER, LINE INTERCEPT --

Management unit 27R, Study no: 1

Species	Percent Cover
	'03
Artemisia filifolia	5.86
Artemisia tridentata tridentata	4.66
Chrysothamnus nauseosus	1.76
Purshia tridentata	10.05
Rhus trilobata	.23

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 27R, Study no: 1

Species	Average leader growth (in)
	'03
Artemisia tridentata tridentata	1.1
Purshia tridentata	3.6

BASIC COVER --

Management unit 27R, Study no: 1

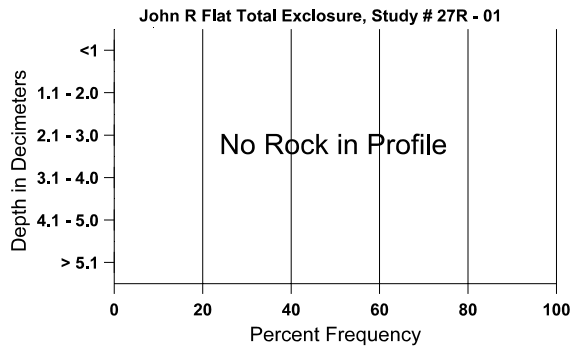
Cover Type	Average Cover %	
	'98	'03
Vegetation	28.59	23.22
Litter	41.92	48.09
Cryptogams	7.93	1.79
Bare Ground	41.73	43.27

SOIL ANALYSIS DATA --

Management unit 27R, Study no: 1, Study Name: John R. Flat Total Exclosure

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
32.7	71.0 (17.7)	5.5	90.2	4.0	5.8	0.4	6.8	3.2	0.3

Stoniness Index



PELLET GROUP DATA --

Management unit 27R, Study no: 1

Type	Quadrat Frequency		Days use per acre (ha)	
	'98	'03	'98	'03
Rabbit	8	27	N/A	N/A
Deer	-	24	N/A	N/A

BROWSE CHARACTERISTICS --

Management unit 27R, Study no: 1

		Age class distribution (plants per acre)					Utilization				
Y	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Artemisia filifolia											
98	840	500	20	640	180	60	0	0	21	14	36/47
03	640	-	20	340	280	20	0	0	44	3	36/40
Artemisia tridentata tridentata											
98	920	20	120	600	200	540	0	0	22	13	44/54
03	720	-	-	380	340	580	11	0	47	22	38/44
Chrysothamnus nauseosus											
98	0	-	-	-	-	-	0	0	0	0	-/-
03	200	-	-	80	120	60	0	0	60	20	38/47

		Age class distribution (plants per acre)					Utilization				
Y e a r	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
<i>Chrysothamnus viscidiflorus</i>											
98	160	-	-	120	40	20	0	0	25	0	41/56
03	0	-	-	-	-	-	0	0	0	0	-/-
<i>Ephedra viridis</i>											
98	0	-	-	-	-	-	0	0	-	0	-/-
03	0	-	-	-	-	-	0	0	-	0	56/84
<i>Eriogonum nummularre</i>											
98	40	-	-	40	-	-	0	0	-	0	24/41
03	0	-	-	-	-	-	0	0	-	0	-/-
<i>Purshia tridentata</i>											
98	940	-	100	840	-	-	0	0	0	0	32/59
03	940	-	-	540	400	20	49	4	43	9	42/62
<i>Rhus trilobata</i>											
98	0	-	-	-	-	-	0	0	-	0	28/27
03	20	-	-	20	-	-	0	0	-	0	19/22
<i>Yucca</i> spp.											
98	0	-	-	-	-	-	0	0	-	0	20/29
03	0	-	-	-	-	-	0	0	-	0	30/44